

U.S. Patent Application Serial No. 10/015,564
Amendment filed November 2, 2006
Reply to OA dated August 2, 2006

REMARKS

Claims 26, 28 and 30-58 are pending in this application. The present amendment amends claims 31, 34 and 38. Upon entry of this amendment, claims 26, 28 and 30-58 will be pending.

Applicant respectfully submits that no new matter has been added. Support for the amendments to the claims is discussed below. It is believed that this Amendment is fully responsive to the Office Action dated **August 2, 2006**.

The language in claims 31 and 34, lines 1 and 2, of "A coated film having a gas barrier property coated a gas barrier layer on at least one side of a flexible polymer film" would be more [grammatically correct] if reformulated as "A coated film having a gas barrier property comprising a gas barrier layer coated on at least one side of a flexible polymer film." (Office action paragraph no. 2)

The claims have been amended as suggested by the Examiner.

Claims 31-58 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-19 of copending Application no. 10/516,956. (Office action paragraph no. 3)

The rejection is obviated by the filing of a terminal disclaimer over USSN 10/516,956. The terminal disclaimer papers accompany this Amendment.

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Applicant respectfully notes that the Examiner has not listed the '956 application in the PTO-892 form, and Applicant requests that the '956 application be so listed.

Claims 31-58 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-12 of U.S. Patent No. 6,861,147. (Office action paragraph no. 4)

The rejection is obviated by the filing of a terminal disclaimer over U.S. Patent No. 6,861,147. The terminal disclaimer papers accompany this Amendment.

Claims 31-58 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1, 6, 7 and 13-27 of copending Application no. 10/488,684. (Office action paragraph no. 5)

USSN 10/488,684 was cited in an obviousness-type double patenting rejection in the Office action dated December 14, 2004, and that rejection was obviated by filing a terminal disclaimer over the '684 application in the Response dated March 11, 2005. Since a terminal disclaimer has already been filed, the present obviousness-type double patenting rejection is moot.

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Claims 26 and 28 are deemed to be allowable since none of the cited prior art recites the claimed reactant (C) used to prepare the curing agent. Claims 34-37 and 48-58 would also be allowable contingent upon the resolution of the obviousness-type double patenting rejections advanced hereinabove since independent claims 34 and 48 also require reactant (C).
(Office action paragraph no. 6)

Applicant has obviated the obviousness-type double patenting rejections of claims 34-37 and 48-58, as discussed above. Claim 34 has been amended for clarity as discussed above. Allowance of claims 26, 28, 34-37 and 48-58 is respectfully requested.

Claims 31-33 and 38-47 are rejected under 35 U.S.C. 103(a) as being unpatentable over Japanese Patent Nos. 8-104738 (Japanese '738), 63-301264 (Japanese '264) and 47-30640 (Japanese '640) and Great Britain Patent No. 2,112,388 in view of Carlblom et al. Patent No. 5,728,439 and Huang et al. Patent No. 3,683,044. (Office action paragraph nos. 7-14)

Applicant notes that JP '738 is listed in the PTO-892 although it was already of record in the application, having been cited in the previous Office action in a rejection in combination with Huang '044. The Examiner appears to be providing an additional machine translation; however, Applicant provided a translation of this reference with the Response of February 28, 2006.

The Examiner cites JP '738 for a coating film comprising an epoxy resin and either a reaction product of xylylenediamine and a carboxyl group-containing compound such as a dimer acid, or a Michael reaction product of xylylenediamine and an acrylic compound such as methyl methacrylate.

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JP '264 is cited for a coating composition containing a polyglycidylamine epoxy resin and a polyamideamine derived from xylylenediamine and a polymerized fatty acid and the reaction product of xylylenediamine and an acrylic compound such as methyl methacrylate. JP '640 is cited for a blend of an epoxy resin and an amideamine hardener produced from m-xylylenediamine and methyl acrylate. GB '388 is cited for a formulation obtained from the reaction product of m-xylylenediamine and maleic acid, and epoxy resins derived from aromatic amines. Carlblom '439 is cited for a blend of a polyamine such as m-xylylenediamine and “any epoxide”, with citation of TETRAD X, which contains a m-xylylenediamine moiety.

The Examiner states that “it would have been obvious to employ the compositions of Japanese '738, '264 and '640 and the British patent as a coating as per Carlblom et al. ...” for the reasons given in paragraph no. 12 of the Office action. The Examiner further combines the cited references with Huang et al. in paragraph no. 14 of the Office action.

Reconsideration of the rejection is respectfully requested in view of the amendments to claims 31 and 38, and in view of the attached Declaration under 37 CFR 1.132 and the attached partial translation of JP47-30640B.

Claims 31 and 38 have each been amended: “said amine curing agent is consists essentially of a reaction product obtained from reactants consisting essentially of the following (A) and (B) in a molar ratio [(B)/(A)] of 0.3 to 0.95:”. Support for this recitation may be found on page 16, lines 3-6 of the specification.

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In addition, claims 31 and 38 have been amended to recite that the polyfunctional compound is a "compound of acrylic acid, methacrylic acid and/or derivative thereof, fumaric acid, pyromellitic acid, trimellitic acid or derivatives thereof". Support for this amendment may be found on page 13, line 18, to page 14, line 2, of the specification.

Applicant here addresses the teachings of the individual references, and then discusses the combination of references in the rejection.

(1) Japanese Patent Publication No. 8-104738.

The curing agent for epoxy resin in JP8-104738A contains both polyamine compound (A) and fatty compound (B) as indispensable components.

In JP8-104738A, polyamine compound (A) was mixed with fatty amine compound (B) and the mixture thus obtained was maintained to a uniform state with heating and cooled to a room temperature, whereby the curing agent for epoxy resin was prepared (paragraphs [0020] and [0031]). That is, at the stage of preparation of the curing agent for epoxy resin, polyamine compound (A) was mixed with fatty amine compound (B) to prepare a uniform mixture.

As noted above, the phrase "amine curing agent is a reaction product of" in claims 31 and 38 has been amended to "amine curing agent consists essentially of". The phrase "amine curing agent consists essentially of" excludes additional components from being blended with the amine curing agent of the present invention. That is, the amine curing agent of the present invention cannot contain the fatty compound (B) disclosed in JP8-104738A.

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In addition, Applicant has attached a Declaration under 37 CFR 1.132 by Shuta KIHARA, dated July 12, 2006, demonstrating that the composition as claimed in claims 31 and 38 has unexpected effects over JP8-104738A. The Declaration compares Example 3 of the present specification to a new Comparative Example 9, based on the disclosure of JP '738A.

As demonstrated in the Declaration, the coated film having a gas barrier property formed by curing of the composition of the present invention exhibits more excellent gas barrier property than that used the composition disclosed in JP8-104738A. This effect is unexpected over the reference.

(2) Japanese Patent Publication No. 63-301264

The curing agent to be used disclosed in JP63-301264A contains two components of a polyamide amine derived from xylylenediamine and an acrylic derivative of xylylenediamine as main components.

Examples of the polyamide amine derived from xylylenediamine include a condensation product of (1) xylylenediamine and (2) a polymerized fatty acids such as a dimer acid or a trimer acid, obtained by polymerization of a fatty acid having an unsaturated bond such as linolenic acid, oleic acid, linoleic acid, eladic acid or recinoleic acid.

As shown in amended claims 31 and 38, the amine curing agent of the present invention excludes such a polymerized fatty acid disclosed in 63-301264A.

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(3) Japanese Patent Publication No. 47-3 0640.

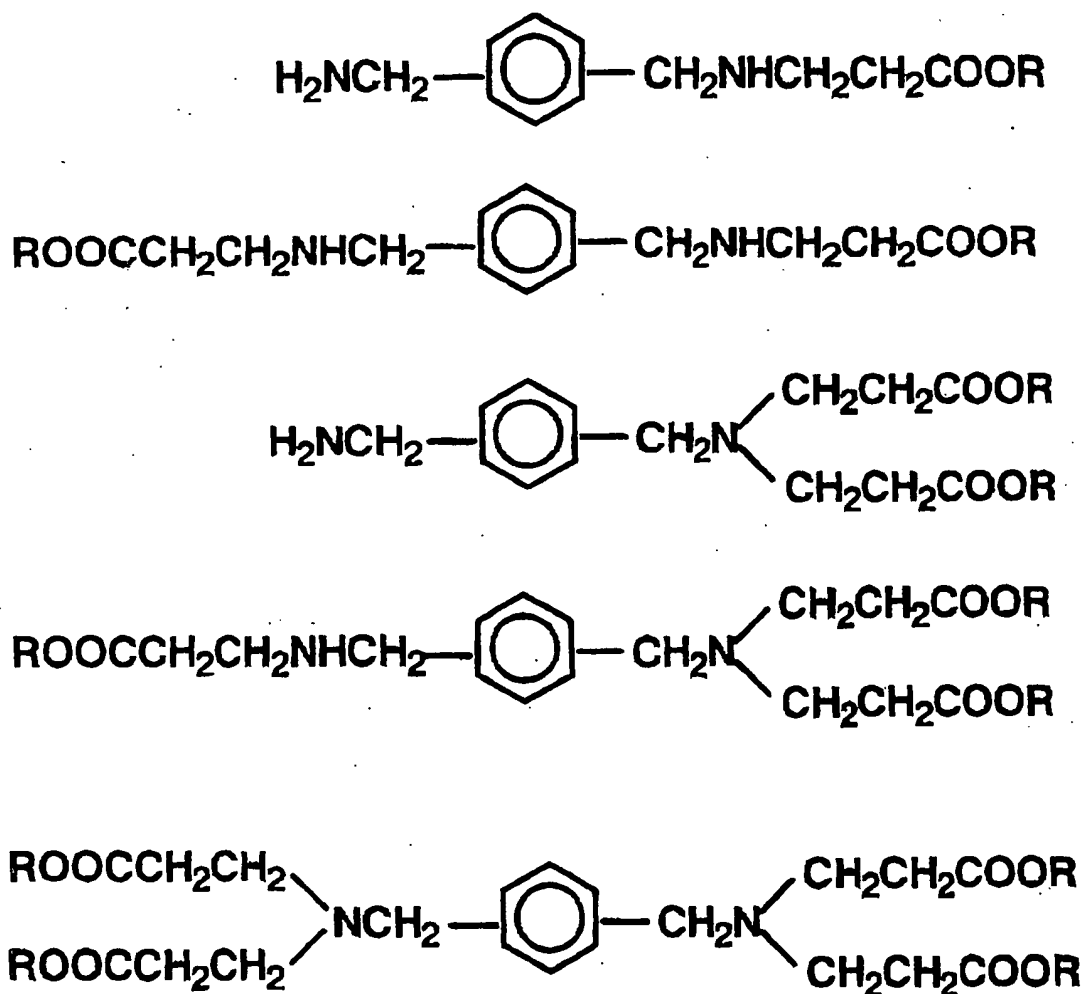
Attached please find a partial English translation of JP47-30640B.

JP47-30640B discloses a process for producing a thermosetting resin with heat resistance which comprises adding an uncured epoxy resin to an amide-amine oligomer having amide bond in its main chain and branching of $-R_2-COOR_3$ (R_3 : hydrocarbon-yl group) bonded to nitrogen of the amide group obtained by an aromatic diamine and excess mol of acrylate or p-vinylbenzoate to the aromatic diamine and heating. Metaxylylenediamine was used as the aromatic diamine in Example 1.

In the process for producing the amide-amine oligomer, 1 mol of an aromatic diamine reacts with more than 1 mol of an acrylate or an p-vinylbenzoate. The amide-amine oligomer thus obtained has amide bond and branching of ester group bonded to nitrogen of the amide group. Apparently, excess acrylate or p-vinylbenzoate forms branching of the ester group bonded to nitrogen of the amide group.

However, as recited in amended claims 31 and 38, the reaction molar ratio of (B) polyfunctional compound/(A) metaxylylenediamine or paraxylylenediamine is 0.3 to 0.95.

The reaction product to be obtained thus contains no the following terminal ester compounds, because excess acrylate or p-vinylbenzoate is not used.



Further, excess unreacted diamine is not removed and remains in the reaction product of the present invention.

The amide-amine oligomer of JP47-30640B contains no such unreacted diamine. Therefore, the amine curing agent of claims 31 and 38 is clearly distinguished from the amide-amine oligomer of JP47-30640B.

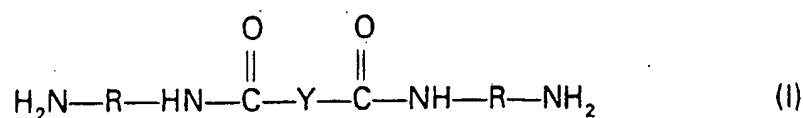
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(4) GB 2 112 388A

GB 2 112 388A discloses carboxylic acid amides containing amine groups represented by the formula I as a curing agent for epoxy resins (page 1, left col.)



In the formula I, m-xylylendiamine group is used as one example of R (page 1, line 79) and Y is preferably the radical of phthalic acid, tetrahydrophthalic acid, methyltetrahydrophthalic acid, hexahydrophthalic acid, succinic acid, dodecylsuccinic acid or maleic acid (page 1, left col. 2, lines 56 to 59).

However, as recited in amended claims 31 and 38, the amine curing agent of the present invention is clearly distinguished from that of GB 2 112 388A.

(5) U.S. Patent 5,728,439 (Carlblom et al.)

Carlblom et al. discloses a gas barrier composition which is a mixture of polyepoxide (B) and initial polyamine (A) (col. 5, lines 51 to 56). Metaxylylenediamine is used as one example of the initial polyamine (A) (col. 6, line 5), when the initial polyamine is pre-reacted to form an adduct (col. 5, lines 57 to 58).

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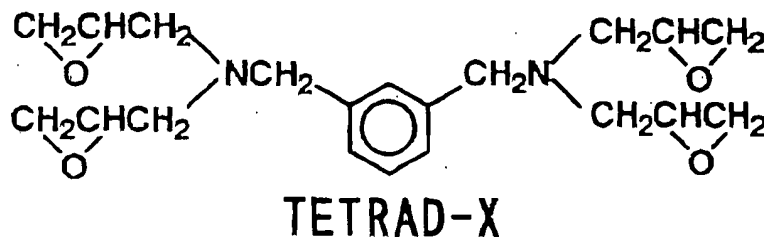
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As one embodiment, the polyamine adduct is formed by reacting the initial polyamine with epichlorohydrin (col. 5, line 65, to col. 6, line 1).

As another embodiment, the polyamine adduct is formed by reacting the initial polyamine with polyepoxide in which a plurality of glycidyl groups are linked to an aromatic member (col. 6, lines 9 to 12).

Examples of such polyepoxide include N, N, N', N'-tetrakis (oxiranylmethyl)-1,3-benzene dimethanamine (e.g., TETRAD X epoxy resin from Mitsubishi Gas Chemical Co.) .

TETRAD X has the following structure and is obtained by reaction of metaxylylenediamine and epichlorohydrin.



However, Carlblom et al does not disclose the amine curing agent of the present invention.

(6) Huang et al.

Huang et al. discloses a composition for coating comprising an epoxy resin and an amine curing agent, wherein the epoxy resin is an epoxy with a glycidylamine moiety derived from

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metaxylylenediamine, and that the epoxy resin can be cured by curing agent customarily used for curing glycidyl compounds.

However, Huang et al. does not disclose the amine curing agent of the present invention.

Regarding the combination of references

As described above, the amine curing agent of the present invention is clearly distinguished from each curing agent for epoxy resin disclosed in JP8-104738A, JP63-301264A, JP47-30640B and GB2 112 388A. Therefore, none of the references discloses the amine curing agent of the present invention.

Thus, even if polyglycidylxylylenediamine disclosed in Carlblom et al. and Huang et al. is combined with each curing agent for epoxy resin disclosed in JP8-104738A, JP63-301264A, JP47-30640B and GB2 112 388A, this will not result in the coated film and the multilayered laminate having an excellent gas barrier property of the present invention. The present claims are therefore not obvious over Japanese Patent Nos. 8-104738, 63-301264) and 47-30640, Great Britain Patent No. 2,112,388, and Huang et al. Patent No. 3,683,044, taken separately or in combination.


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If, for any reason, it is felt that this application is not now in condition for allowance, the Examiner is requested to contact the Applicant's undersigned agent at the telephone number indicated below to arrange for an interview to expedite the disposition of this case.

In the event that this paper is not timely filed, the Applicant respectfully petitions for an appropriate extension of time. Please charge any fees for such an extension of time and any other fees which may be due with respect to this paper, to Deposit Account No. 01-2340.

Respectfully submitted,

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PATENT TRADEMARK OFFICE

Enclosures: 1) Declaration under 37 CFR 1.132 by Shuta KIHARA dated July 12, 2006
2) Partial English Translation of JP 47-30640B (with translator's declaration)
3) Terminal Disclaimer over U.S. Serial No. 10/516,956
4) Terminal Disclaimer over U.S. Patent No. 6,861,147

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